AMENDMENTS TO THE SPECIFICATION

Please replace paragraph 0077 with the following amended paragraph:

[0077] FIG. 8 is a flow diagram illustrating step 218 of FIG. 6, in which a reset minimum process is performed to set a new minimum limit for the range of the manipulandum and to adjust the current maximum limit, if necessary. This process is used for force feedback devices 12 having relative sensors, since the microprocessor 50 does not know the position of the manipulandum at startup with respect to the actual, physical range of the device when relative sensors are used; only after the manipulandum has been moved in its workspace does the actual range of the device become apparent. The process of FIG. 8 provides a default range to the manipulandum upon startup and may adjust this default range as the manipulandum moves through its workspace. The default range is a range that is greater than zero, but which is less than the entire range of the device. This is because either a zero range or a large range, if assigned initially, can cause undesirable effects. The zero range (or a range close to zero) is undesirable because of the instability and oscillation that this causes upon startup of the device due to default "software spring" forces provided at startup (the default spring forces output from the actuator are preferably used to center the manipulandum in its workspace even when no actual force sensations are being instructed by an application program, and also when the device is idle). For example, since the entire range of the device would be very small at startup, and since the default spring has a force based on the distance moved in this range, the force will be very large since any tiny motion of the manipulandum will move it across a large portion of its range, which normalizes to a large distance. This translates to a large spring force, which causes

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the manipulandum to spring back and forth in an oscillating manner until a larger range has been

~~travelled~~ traveled through and sensed. A large range is undesirable because the device may

startup when the manipulandum is close to a range limit, so that some of the assigned range

values are outside the achievable range of the manipulandum.